CSC 648/848 Software Engineering Spring 2022

Bootstrap Outline

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What is Bootstrap?

- In simple words, it exists to make your life easy!

- It is a front-end open-source toolkit primarily famous for it's easy and simple styling, responsive grid system.

- Bootstrap's responsive CSS adjusts to phones, tablets, and desktops.

- Fun Fact: It was created by twitter in mid 2010. It served as the style guide for internal tools development at the company for over a year before its public release and continues to do so today.

- You will mostly be using bootstrap to make your website mobile responsive, attractive and easy to code!

Bootstrap Advantages

- Consistent framework that supports multiple browsers.
- Responsive structures and styles
- Lightweight and customizable
- Good documentation and community support
- Great grid system
- Availability of multiple components and functions

I like to imagine bootstrap as a ready css stylesheet already made for us!

- This is why linking it to your project is so easy!

- You just have to copy-paste the below link into your <head> before you load all other stylesheets

- <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">

- Adding JS scripts for additional features.

- <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-ka7Sk0Gln4gmtz2MlQnikT1wXgYsOg+OMhuP+IlRH9sENBO0LRn5q+8nbTov4+1p" crossorigin="anonymous"></script>

- https://getbootstrap.com/docs/4.3/getting-started/introduction/

- The above link mentions is all in greater detail!

```html
<head>
  <link
    rel="stylesheet"
    href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css"
    integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3"
    crossorigin="anonymous"
  />

  <link rel="stylesheet" href="styles.css" />

  <!-- Option 1 -->
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-ka7Sk0Gln4gmtz2MlQnikT1wXgYsOg+OMhuP+IlRH9sENBO0LRn5q+8nbTov4+1p" crossorigin="anonymous"></script>

  <!-- Option 2: Separate Popper and Bootstrap JS -->

  <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.10.2/dist/umd/popper.min.js" integrity="sha384-7+zCNj/IqJ95wo16oMtfsKbZ9ccEh31e0z1HGyDuCQ6wgnyJNSYdrPa03rtR1zdB" crossorigin="anonymous"></script>
  <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.min.js" integrity="sha384-QJHtvGhmr9XOIpI6YVutG+2QOK9T+ZnN4kzFN1RtK3zEFEIsxhlmWl5/YESvpZ13" crossorigin="anonymous"></script>

  <title>Bootstrap Demo</title>

</head>

<body>
```

Default HTML vs Bootstrap Styling (the only difference between both codes is that bootstrap classes are added on right side)

Html Button

Bootrap Button

Email address Email

Password Password

File input Choose File No file chosen

Example block-level help text here.

☐ Check me out
Submit

Email address

Email

Password

Password

File input

Choose File No file chosen

Example block-level help text here.

☐ Check me out

Submit

Bootstrap is Mobile First!

- Bootstrap 2 -> Had a function where the meta tag needed to have the keyword "viewport" to make it mobile responsive.

- Bootstrap 3 -> The developers rewrote the project to make it mobile friendly from the start. (No need to do anything extra).

- **How does Bootstrap make it mobile responsive?**
  - The default html method is writing media queries for every css element.
  - While using bootstrap classes, the developers have already done all the work for you! All you must do is add that class (eg: class = "row align-items-center" will not only center align your elements but ensure it is centered even after resizing).

How to read the Bootstrap docs!
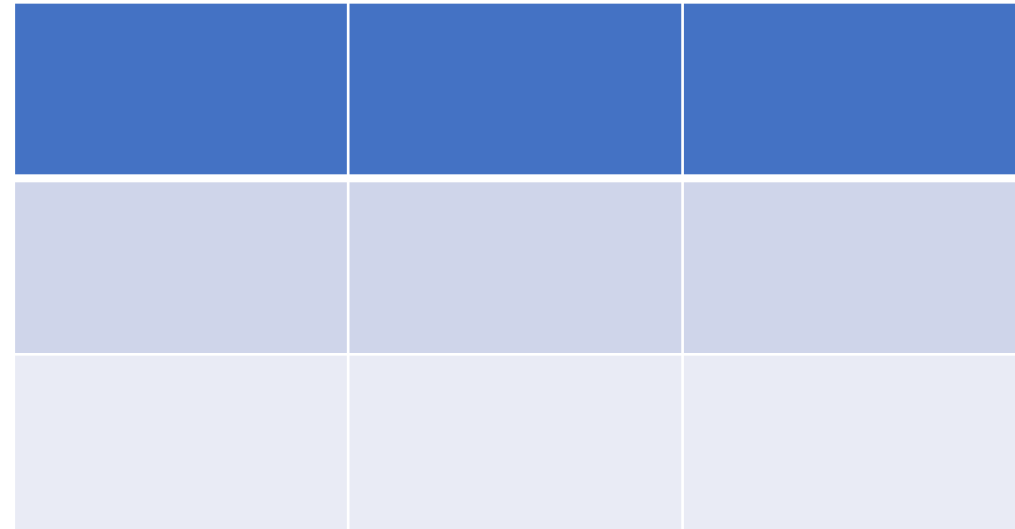
https://getbootstrap.com/docs/

The above link is the answer to all your bootstrap questions!

Bootstrap Grid - Important

- The bootstrap grid basically provides a responsive grid system that can not only allow you to resize elements within it, but also align elements (centering div, aligning to left or right and more advanced features) easily.

Most basic bootstrap Grid

```html
<div class="container">
  <div class="row">
    <div class="col">Col 1</div>
    <div class="col">Col 2</div>
    <div class="col">Col 3</div>
    <div class="col">Col 4</div>
  </div>
  <div class="row">
    <div class="col">Col 1</div>
    <div class="col">Col 2</div>
    <div class="col">Col 3</div>
    <div class="col">Col 4</div>
  </div>
  <div class="row">
    <div class="col">Col 1</div>
    <div class="col">Col 2</div>
    <div class="col">Col 3</div>
    <div class="col">Col 4</div>
  </div>
</div>
```
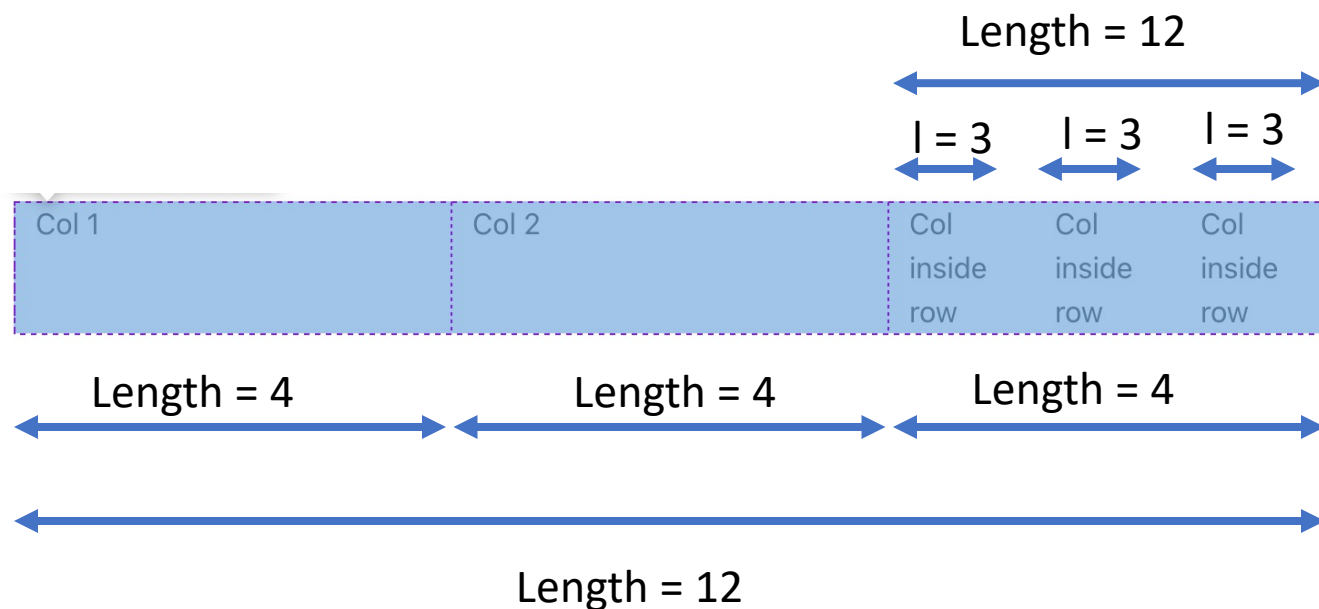
Col 1	Col 2	Col 3	Col 4
Col 1	Col 2	Col 3	Col 4
Col 1	Col 2	Col 3	Col 4

How is the grid divided? How does it work? How should we align elements using that information?

- Each row is divided into 12 blocks.
- You can have rows inside columns.

```
<div class="container">
  <div class="row">
    <div class="col">Col 1</div>
    <div class="col">Col 2</div>
    <div class="col">
      <div class="row">
        <div class="col">Col inside row</div>
        <div class="col">Col inside row</div>
        <div class="col">Col inside row</div>
      </div>
    </div>
  </div>
</div>
```

Length = 12

l = 3   l = 3   l = 3

| Col 1 | Col 2 | Col inside row | Col inside row | Col inside row |

Length = 4   Length = 4   Length = 4

Length = 12

How does the bootstrap grid provide responsiveness?

- No Need to manually set media queries.
- Bootstrap does the work for you!

xs - extra small
sm = small
md = medium devices
ld = large devices

Grid options

See how aspects of the Bootstrap grid system work across multiple devices with a handy table.

	Extra small devices Phones (<768px)	Small devices Tablets (≥768px)	Medium devices Desktops (≥992px)	Large devices Desktops (≥1200px)
Grid behavior	Horizontal at all times	Collapsed to start, horizontal above breakpoints		
Container width	None (auto)	750px	970px	1170px
Class prefix	`.col-xs-`	`.col-sm-`	`.col-md-`	`.col-lg-`
# of columns	12			
Column width	Auto	~62px	~81px	~97px
Gutter width	30px (15px on each side of a column)			
Nestable	Yes			
Offsets	Yes			
Column ordering	Yes			

```
<div class="row">
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
  <div class="col-md-1">.col-md-1</div>
</div>
<div class="row">
  <div class="col-md-8">.col-md-8</div>
  <div class="col-md-4">.col-md-4</div>
</div>
<div class="row">
  <div class="col-md-4">.col-md-4</div>
  <div class="col-md-4">.col-md-4</div>
  <div class="col-md-4">.col-md-4</div>
</div>
<div class="row">
  <div class="col-md-6">.col-md-6</div>
  <div class="col-md-6">.col-md-6</div>
</div>
```
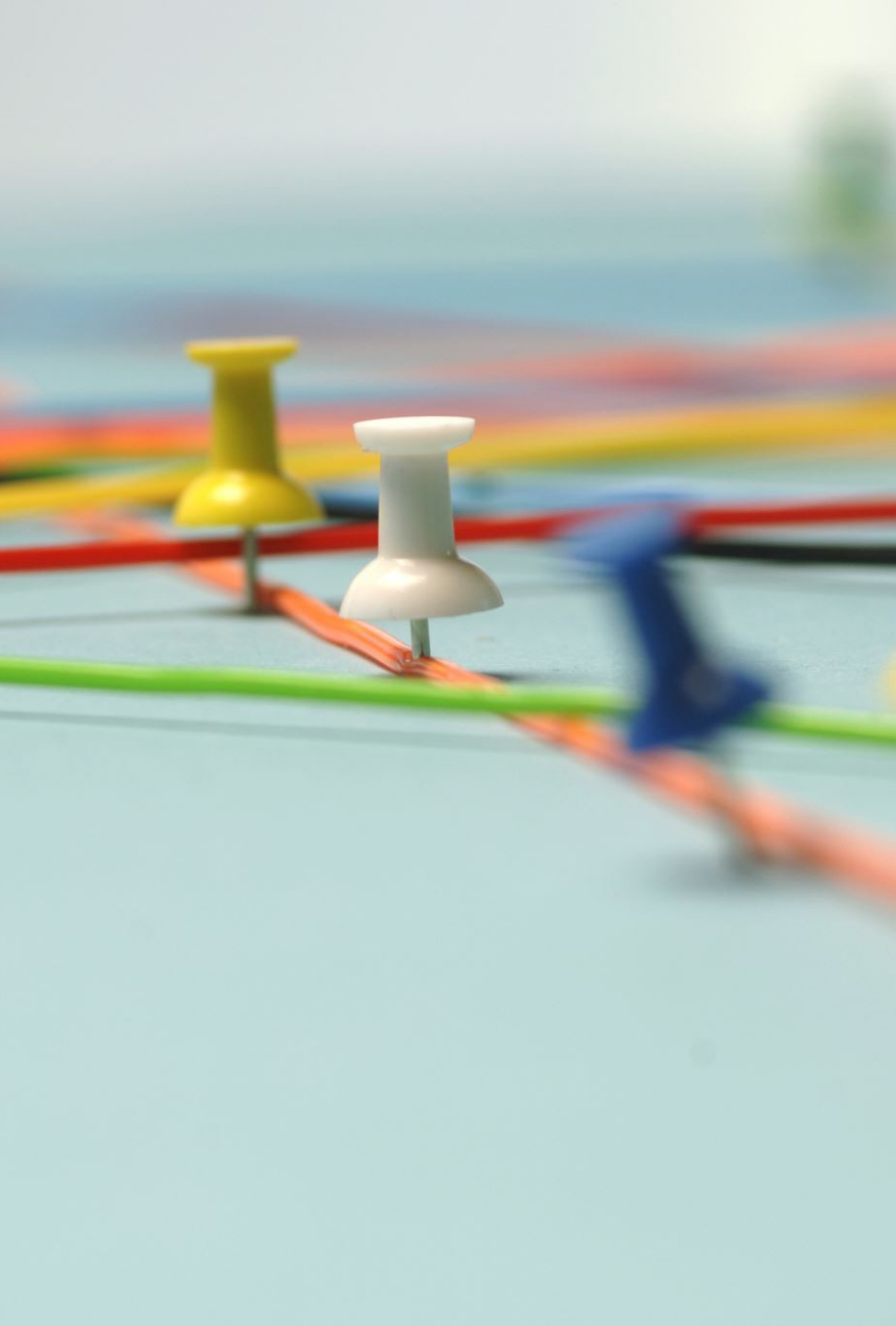
Horizontal on medium devices (desktop)

Vertical on smaller devices (phones)

Learning more on Bootstrap Grid

- https://getbootstrap.com/docs/3.4/css/#forms

More fun elements on bootstrap which can be explored!

- Accordion

- Alerts

- Badges

- Cards

- Carousels

- DropDowns

- Navbar

- More at https://getbootstrap.com/docs/5.1/components/

Conclusion

- Bootstrap is a powerful toolkit - a collection of HTML, CSS, and JavaScript tools for creating and building web pages and web applications. It is a free and open-source project, hosted on GitHub, and originally created by (and for) Twitter.

- It is responsive by design, it maintains wide browser compatibility, it offers consistent design by using re-usable components, and it is very easy to use and quick to learn.

Bootstrap – Useful links

- [Bootstrap get started](https://www.w3schools.com/bootstrap/bootstrap_get_started.asp) - https://www.w3schools.com/bootstrap/bootstrap_get_started.asp
- [How to incorporate bootstrap in project](https://www.youtube.com/watch?v=nvGXLsuaGmE) - https://www.youtube.com/watch?v=nvGXLsuaGmE
- Bootstrap Docs: https://getbootstrap.com/docs/5.1/getting-started/introduction/